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Oscar Oehlsen

PROFESSIONAL SUMMARY

I am a motivated and detail-oriented chemistry PhD student at the University of Texas at El Paso with a strong foundation in synthetic air-sensitive organometallic chemistry, and X-ray absorption spectroscopy of molecular actinides. Experienced in performing difficult inorganic syntheses under inert conditions, handling radioactive isotopes, as well as characterizing complexes using advanced spectroscopic and crystallographic techniques such as X-ray absorption near edge spectroscopy, X-ray photoelectron spectroscopy, Nuclear Magnetic Resonance, and single crystal X-ray diffraction. Published researcher with five years' experience managing independent projects, mentoring students, and collaborating within a group to strengthen the laboratory.

EDUCATION

PhD in Chemistry | *University of Texas at El Paso* | GPA 3.9 Expected 2026

- Conducted research under the mentorship of Dr. Skye Fortier with an emphasis on synthetic organometallics and the X-ray absorption spectroscopy of air sensitive actinides.
- Teaching assistant for Periodic Table, Physical Chemistry I & II

Bachelor of Chemistry | *Western New Mexico University* | GPA 3.9 Fall 2021

- Graduated with WNMU Millennial III Honors and Awarded presidents list from 2019 through 2021.
- Tutored students of general chemistry I, II, chemistry for life & organic chemistry for WNMU while participating in workshops that strengthen students understanding of chemistry by direct mentorship.

AWARDS & HONORS

Received funding through the ongoing Los Alamos WP-TNT initiative at UTEP for the development of surrogate plutonium standards for solution assay instruments through spring and summer 2026.

Received certificate of completion from the American Crystallography association (ACA) on processing molecular crystal structures using APEX-4 and Olex2 during summer 2022.

Graduated with WNMU's Millennial III Honors and awarded presidents list from 2019 through 2021.

Awarded funds by the New Mexico Alliance for Minority Participation Undergraduate Research Scholars for fall 2021 senior project involving mentorship of a fellow undergraduate.

Awarded funds by Student Research & Professional Development for fall 2021 senior project on research to prevent oxidation during iron-based nanoparticle synthesis.

Awarded funding from the Student Research & Professional Development program at WNMU for the summer of 2020 on a project involving the study of ferrofluids.

PUBLICATIONS

Oehlsen, O. Cervantes-Ramírez, I. Cervantes-Avilés, P. Medina-Velo, I., Approaches on ferrofluid synthesis and applications: Current status and future perspectives. *ACS Omega,* **2022**, 7, *4*, 3134–3150

Oehlsen, O. MacGregor, F. Jones, M. Torres, A. Moreau, L. Wright, J. Ma, L. Fortier, S., A simple and practical wax-encapsulation method for air-sensitive XAS samples. *Inorg. Chem. Front.*, **2026**, 1, *13*, 12-19

M. Torres, A. Parveen, R. Murillo, J. Mavragani, N. Loutsch, N. MacGregor, F. **Oehlsen, O.** Jones, M. J. F. Wright, J. Ma, L. Metta-Magaña, A. Murugesu, M. Vlaisavljevich, B. Fortier, S. Homoleptic uranium arenocenes: A new class of actinide sandwich compounds. *ChemRxiv.,* **2026** (0618). (In Review)

WORK EXPERIENCE

PhD Chemistry Researcher | *University of Texas at El Paso* 2022 - present
Developed a practical wax-encapsulation technique for air-sensitive XAS samples, resulting in an accepted publication in *Inorganic Chemistry Frontiers*. After synthesizing a library of 67 molecular uranium complexes this wax technique was used to successfully characterize the samples by X-ray absorption spectroscopy at Brookhaven National Laboratory. Current work involves the library manuscript writeup; experimental work on a titanium organometallic complex; and hydrodesulfurization chemistry using UV irradiation and high pressure thermolysis with characterization by nuclear magnetic resonance, and single crystal X-ray diffraction.

PhD Chemistry TA | *University of Texas at El Paso* 2022 - 2025
Taught the upper-level physical chemistry laboratory which involved advanced topics of thermodynamics and quantum. The laboratory lectures and experimental section were exclusively taught by me after the first year, during which time I was mentored by a senior student and the professor.

Undergraduate Chemistry Researcher | *Western New Mexico University* 2020 - 2021
Synthesized iron oxide nanoparticles using co-precipitation methods in air while mitigating unintended oxidation. This project later transitioned into the writing of a synthetic review article of ferrofluids published in ACS Omega.

Chemistry Tutor | *Western New Mexico University* 2019 - 2021
Assessed students' progress throughout tutoring sessions and adjusted instructional methods and content focus. Tutored struggling, average, and advanced students to reinforce their understanding of general, organic and medical chemistry.

Residential Electricians Apprentice | *Silver City New Mexico* 2018-2020
Worked on new and restorative electrical construction of residential houses in and around Silver City New Mexico. Work involved: installing and wiring 100-200 amp electrical entrances, wiring lighting fixtures/outlets, solving archaic wiring problems, and ensuring safe/convenient working conditions for future electrical modifications.

PRESENTATIONS

UTEP Annual Chemistry and Biochemistry Day | Poster presentation Spring 2026
Showcased the first example of homogeneous, cyclic early transition metal hydrodesulfurization acknowledged as an honorable mention for best poster.

Rare Earth Research Conference | Poster presentation Summer 2025
Presented the uranium amides portion of the X-ray absorption spectroscopy library.

UTEP Annual Chemistry and Biochemistry Day | Short Talk Spring 2025
Covered the results of a large-scale X-ray absorption spectroscopy library of uranium across the oxidation states of +3 through +6.

UTEP Annual Chemistry and Biochemistry Day | Poster presentation Spring 2024
Demonstrated the early results of photolytic transformations using an early metal for hydrodesulfurization and won the second-best poster award.

MENTORSHIP

Undergraduate students mentored during PhD

- Mathew Jones – Currently pursuing a MD at Paul L. Foster School of Medicine
- Ariel Lee – Working toward a Bachelor of Chemistry at the University of California Santa Barbara
- Jace Jenschke – Looking for high school teaching opportunities in El Paso TX

SKILLS

Glove Box | Four years of intensive synthetic glovebox experience on both radioactive uranium complexes and non-rad transition metal/ligand synthesis. I've assembled 4 gloveboxes both double and single and have experience with M-Braun, Vigor, and Vac atmosphere workflows. Experienced in the maintenance and repair of glovebox O_2/water analyzers, circuitry, catalyst beds, freezers and vacuum chambers.

Schlenk Line Techniques | Four years of rigorous drying of solvents by air sensitive distillations. This includes Dioxane, Pyridine, DCM, Hexamethyldisiloxane, and cyclohexane using sodium ketyl radical, or calcium hydride. Experienced in pressure differential filtration, Soxhlet extraction, cannula transfer, pressure generating reactions, high vacuum sublimation (10^{-4} torr), and the synthesis of air sensitive uranium materials.

Experience with | Pyrophorics, Radioactive Nuclei, Air Sensitive Reagents, High Vacuum and Pressure Systems.

NMR Spectroscopy | Experience with proton, carbon, phosphorous, silicon, and scandium NMR. Multi nuclear spectra and temperature dependent experiments using Bruker instrumentation and MestReNova software.

Single Crystal X-ray Diffraction | Over the course of my PhD I've structurally identified over 20 unique complexes on a Bruker Venture scXRD with processing for disorder and twinning through APEX-4 and Olex 2.

X-ray Absorption Near Edge Spectroscopy | Current record holder for most XAS samples (220) run in a single day at NSLS-2. Extensive experience processing data through the Demeter XAS software package.

X-ray Photoelectron Spectroscopy | Accustomed to preparing and running air sensitive materials using the 831-57-100-2 transfer vessel with carbon dots to immobilize samples and data processing through Avantage.

Additional Experience With | IR Spectroscopy, UV-Vis-NIR, Differential Pulse Voltammetry, ChemDraw, Brunauer Emmett Teller, Powder X-ray Diffraction, Mass Spectrometry, Microsoft Office, Origin, Shelxle, WinSCP, GaussView, Mercury, PuTTY, Gaussian.

Glassware Design | During my PhD I designed and commissioned: three 1 L distillation heads, two high vacuum oil diffusion pumps, a Brozek-style Schlenk line, a sublimator, oil bubblers and thermocouples. Example schematics can be seen below.